

**Work Order ID 60164**

Monday, June 28, 2010 11:47:29 AM



Page 1

Item ID: D205-634-041

Accept



Setup Start



Revision ID:

Item Name: Replacement Skidtube

Stop



Start Date: 6/28/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 7/2/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan:

Date: *7/1/11*

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

Draw Nbr	Revision Nbr
D2580	Rev D

100

0.00



DOCUMENT CONTROL

DC

Document Control

Memo

0.00

Photocopy D205-634 bluefile &amp; type labels per PPP D205-634-041 CHG002

*N/A**7/10/11*

110

0.00



BENDING MACHINE - SKIDTUBES

Memo

0.00

CNC Delta 100 Bender

1-Bend as per program D2580.C on CNC Bender and Folio 16

2-Cut tubes as per Dwg. D2580

3- scribe batch# in aft end of tube

*7/10/11*

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

120



Skidtubes

Memo

0.00

①

BE 10/07/08

Skidtubes

1- Deburr ends

2- C'sink holes as per dwg without cutting fluid

3- Prepare tube for welding, remove alodine as required.

4- Scribe batch number insied aft end of tube.

130



QC

QC5- Inspect part completeness to step on W/O

0.00

S wlot105

0.00

70

Quality Control

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Reference:

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Stop



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Customer:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_

Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start

QC: \_\_\_\_\_ Date: \_\_\_\_\_

SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/  
Work Center ID

140



Skidtubes

Skidtubes

Operation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

0.00

X1

6/28/2010

Memo 0.00

1-Weld step D2576 as per Dwg. D2580 and QSI 004  
A/R□□□ Aluminum Rod *M114242*

2-Prep per QSI 005 and weld crossbolt spacers D2579 as per Dwg. D2580, QSI 004.

For D2579 spacers, weld one side, pass 3/8" drill, weld other side, pass 3/8" drill  
A/R□□□ Aluminum Rod *M114242*

3-Grind welds as per Dwg D2580 Grind flush ridge made from bending

4-Drill holes for wearplates using DT 8217 & DT8937 Open holes to 19/64",  
adjust stopper not to hit web. Deburr

5-Counterbore crossbolt spacers to 7/16" ID x 1.0" deep as per Dwg D2580.  
Deburr holes

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Deburr

7-Drill pilot holes for Tow ring using DT8091, open to .640" and Deburr

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Start Date: 6/28/2010 Start Qty: 1.00



Required Date: 7/2/2010 Req'd Qty: 1.00



Reference:

Approvals:	Process Plan:	Date:	Tooling:	Date:	Run	Start	
	QC:	Date:	SPC (Y/N):	Date:		Stop	

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150 	QC10- Inspect visual per QSI004- ground welds	0.00							
QC Quality Control	Memo	0.00	S 062107						

160



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

S 062107

170



HandFinish

Hand Finishing

Pressure Wash per QSI005 4.3

0.00

Memo

0.00

Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch and leave fwd cap out of solution.

1 BR 10-7-7.

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center ID

200



HandFinish

Hand Finishing

Operation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

0.00

=&gt; 10/07/13

0.00

v

Q

1-Install inserts &amp; wearplates &amp; Gaskets as per Dwg. D2580. Use a drop of Sikaflex on insert holes before installing wearplates

A/R  Sikaflex-291  M113579

Sikaflex expire date: 10/01/11

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step &amp; Aft Cap with Sikaflex. Clean excess adhesive

A/R  Sikaflex-291  M113579

Sikaflex expire date: 10/14/11

5-Wing Wall as per Dwg D2580 and QSI 005 4.4

Batch: 11432

W/O:		WORK ORDER CHANGES						
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Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Work Order ID: 60164



Parent Item: D205-634-041



Parent Item Name: Replacement Skidtube

Start Date: 6/28/2010

Required Date: 7/2/2010

Comments:

IPP Rev:N 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30 KJ  
 IPP Rev P 10.02.19 per PAR09-043 EC verified by:DD  
 IPP Rev. O 06.02.28 Added paperwork EC  
 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D2580-1		Manufactured	No			110	Each	5.0000	1	1			

205 Skidtube bent detail

359297 0 10/11/11

Location	Loc Qty	Loc Code
----------	---------	----------

LG	5	
57028	1	
59297	2	
59299	2	

D2576-3



Manufactured No

140 Each 92.0000 1

Step (machining detail)

Location	Loc Qty	Loc Code
----------	---------	----------

LG	92	
46661	44	
52215	48	

D2579



Manufactured No

140 Each 353.0000 20

Crossbolt Spacer

BE 10/07/07

Location	Loc Qty	Loc Code
----------	---------	----------

LG	353	
57052	5	
57348	4	
58433	54	
59113	290	

20 BE 10/07/07

W/O:		WORK ORDER CHANGES					
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Work Order ID: 60164



Parent Item: D205-634-041



Parent Item Name: Replacement Skidtube

D2855



Manufactured No

200 Each 86.0000

Start Date: 6/28/2010

Start Qty: 1.00

Required Date: 7/2/2010

Required Qty: 1.00

Cap



Location	Loc Qty	Loc Code
----------	---------	----------

FP6	2	
-----	---	--

56613	2	
-------	---	--

ST026	84	
-------	----	--

50513	1	
-------	---	--

50770	28	
-------	----	--

51539	2	
-------	---	--

53791	53	
-------	----	--

	Each	
--	------	--

	1,303.000	
--	-----------	--



AN3-5A



Purchased No

200 Each 1,303.000

Y1 M1 10107113

Bolt

Location	Loc Qty	Loc Code
----------	---------	----------

ST350	1303	
-------	------	--

105057	803	
--------	-----	--

115016	500	
--------	-----	--

	Each	
--	------	--

	3,433.000	
--	-----------	--



AN960JD10L



NAS1149D0332J Purchased

No

Location	Loc Qty	Loc Code
----------	---------	----------

ST348	3433	
-------	------	--

110985	3433	
--------	------	--

	Each	
--	------	--

	17.0000	
--	---------	--



ALS7-1032-130



Purchased

No

Location	Loc Qty	Loc Code
----------	---------	----------

ST282	17	
-------	----	--

113238	17	
--------	----	--

	Each	
--	------	--

	17.0000	
--	---------	--



Insert

X2 M1 10107113

Location	Loc Qty	Loc Code
----------	---------	----------

ST282	17	
-------	----	--

113238	17	
--------	----	--

	Each	
--	------	--

	17.0000	
--	---------	--

X50 M1 10108113

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Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
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Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Work Order ID: 60164



Parent Item: D205-634-041



Parent Item Name: Replacement Skidtube

Start Date: 6/28/2010

Required Date: 7/2/2010

AN3C4A



Purchased

No

200

Each

2,259.000

50

50



BOLT

Location	Loc Qty	Loc Code
ST350	2259	
114103	501	
114108	14	
114416	12	
114523	2	
114859	730	
114941	1000	

x50 M 10/07/13

AN960C10L



NAS1149C0332

R

Purchased

No

200

Each

0.0000

50

50



washer

D3566-13



Manufactured

No

200

Each

37.0000

1

1



Gasket

Location	Loc Qty	Loc Code
FP	14	
53461	14	
FP012	23	
59661	23	

x1 M 10/07/13

D3566-5



Manufactured

No

200

Each

24.0000

1

1



Gasket

Location	Loc Qty	Loc Code
FP015	24	
57682	2	
89158	22	

x1 M 10/02/13

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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Work Order ID: 60164



Parent Item: D205-634-041



Parent Item Name: Replacement Skidtube

Start Date: 6/28/2010

Required Date: 7/2/2010

Start Qty: 1.00

Required Qty: 1.00

D3566-1



Manufactured

No

200

Each

25.0000

2

2



Gasket

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP015	25	
57715	2	
58182	1	
59126	22	

D3564-11



Manufactured

No

200

Each

1.0000

1



Wearshoe

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP019	1	359941
59021	1	

D3564-13



Manufactured

No

200

Each

8.0000

1



Wearshoe

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP17	8	
57922	8	

D3564-9



Manufactured

No

200

Each

16.0000

1



Wearshoe

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP	1	
55334	1	
FP019	15	
57958	2	
59201	13	

W/O:		WORK ORDER CHANGES					
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Parent Item Name: Replacement Skidtube

Start Date: 6/28/2010

Required Date: 7/2/2010

Start Qty: 1.00

Required Qty: 1.00

D3564-5

Manufactured No

200 Each 22.0000

1 1

Wearshoe

Location	Loc Qty	Loc Code
FG	1	
34806	1	
FP19	9	
57525	1	
58709	8	
FP-19	12	
59157	12	

D2594-3

Manufactured No

200 Each 539.0000

16

O-Ring, 205 Skidtube

Location	Loc Qty	Loc Code
FP	539	
55546	19	
58191	28	
59358	492	

D2594-1

Manufactured No

200 Each 499.0000

16

Plug, 205 Skidtube

Location	Loc Qty	Loc Code
FP	190	
42807	112	
55002	71	
57826	7	
FP14	309	
58434	120	
59110	189	

W/O:		WORK ORDER CHANGES					
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**DART**

DESIGN <i>#</i>	DRAWN BY <i>RH</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>#</i>	APPROVED <i>#</i>	DRAWING NO. D2580	REV. D SHEET 1 OF 3
DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY	SCALE NTS
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.26	REDRAWN, INCLUDED DEO 9094/9097	
D	07.02.27	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	

**RELEASED**  
*07.06.28*

QTY -041	QTY -045	Part Number	Description
X		D2580-041	SKIDTUBE ASSEMBLY
	X	D2580-045	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
1	1	D2576-3	STEP
20	24	D2579	CROSS BOLT SPACER
16	16	D2594-1	PLUG
16	16	D2594-3	O-RING
1	1	D2596	205 WEB
1	1	D2855	AFT CAP
1	1	D3564-5	WEARSHOE
1	1	D3564-9	WEARSHOE
1	1	D3564-11	WEARSHOE
1	1	D3564-13	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1	1	D3566-13	GASKET
50	50	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AEIS-1032-130	INSERT
50	50	AN3C4A	BOLT
2	2	AN3-5A	BOLT
50	50	AN960C10L	WASHER
2	2	AN960JD10L	WASHER

SHOP C/RY  
RETURN TO  
ENGINEERING  
UNCONTROLLED C/RY  
SUBJECT TO ALARMING  
WITHOUT NOTICE  
WORK C/RY  
NO. *10164*  
*BB101028*

**GENERAL NOTES:**

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-205 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:  
SEE NOTES ON  
PAGE 2 FOR D2580-041 AND  
PAGE 3 FOR D2580-045
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

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W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

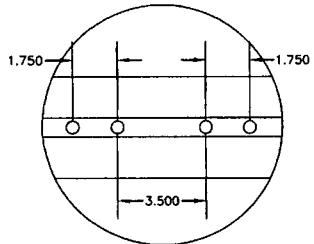
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Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

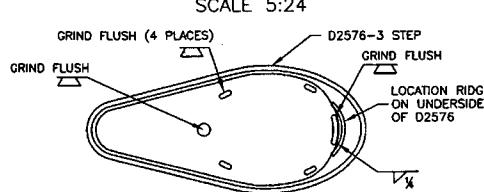
NOTE: Date & initial all entries

**DETAIL E**  
SCALE 5:24

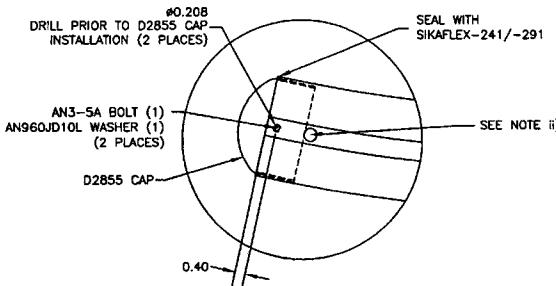


**RELEASED**  
07-06-28

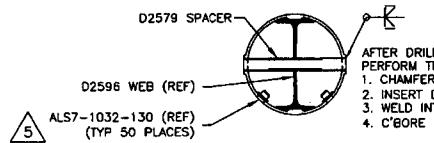
**DETAIL F**  
SCALE 5:24



**DETAIL G**  
SCALE 5:24



**SECTION H-H**  
SCALE 5:24

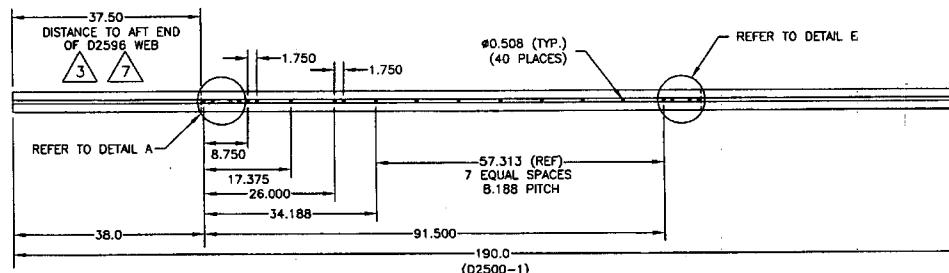


**C**

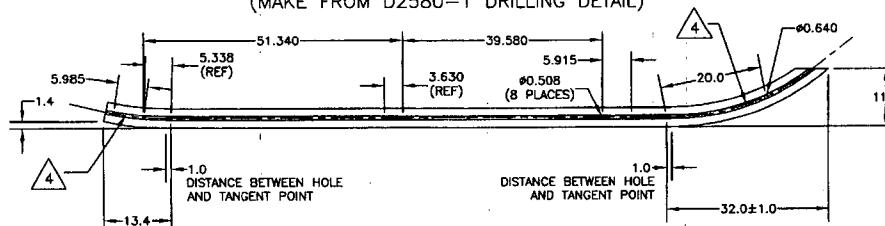
**D2580-045 NOTES**

- i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB  
POWDER COAT ENTIRE ASSEMBLY GREEN (REF. 4.3.5.8) PER DART QSI 005 4.3  
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4
- ii) IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE  
WITH THE SPACER AT THIS LOCATION

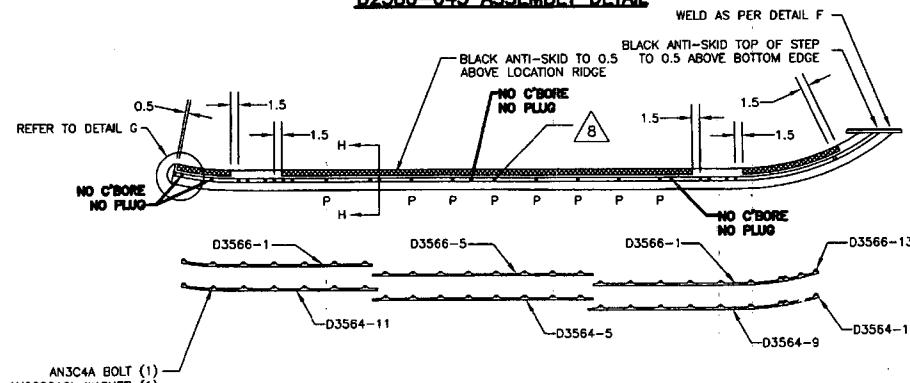
**D2580-1 DRILLING DETAIL**



**D2580-5 BENDING AND CUTTING DETAIL**  
(MAKE FROM D2580-1 DRILLING DETAIL)



**D2580-045 ASSEMBLY DETAIL**



AN3C4A BOLT (1)  
AN960C10L WASHER (1)  
(50 PLACES)

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DESIGN	DRAWN BY	<b>DART</b>	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA
CHECKED	APPROVED		REV. D SHEET 3 OF 3
			DRAWING NO. D2580
DATE			TITLE 205 SKIDTUBE ASSEMBLY
07.02.27			1:24

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

NO. 232

AWS D17.1.2001  
QUALIFICATION TEST RECORD

Name: Barclay Elliott  
Job number: 59105  
Part number: D205-634-041  
Description: 205 skid tube  
Welding Process: Tig[] Mig[]  
Base material: Aluminium  
Current: AC[] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[] fail[]  
Penetration: pass[] fail[]

UNACCEPTABLE

Cracks: pass[] fail[]  
Undercut: pass[] fail[]  
Pin holes: pass[] fail[]  
Overlap (cold lap): pass[] fail[]  
Porosity (surface): pass[] fail[]  
Coloration: pass[] fail[]

Qualifier Barclay Elliott Date of Test Coupon 10.06.01

Welder Barclay Elliott Date of Test Coupon 10.06.01

The above named individual is qualified in accordance with AWS D17.1.2001 to weld